

MORTALITY PATTERNS AMONG U.S. VETERANS WHO SMOKE OCCASIONALLY:  
A PRELIMINARY ANALYSIS

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ABSTRACT

The relationship smoking-related mortality to five levels of occasional smoking is examined in a cohort of 245,000 U.S. veterans followed from 1954 through 1979. Proportional hazards regression analysis has been used to compare men who used tobacco occasionally with those who never used tobacco with respect to mortality from several causes of death. There does not appear to be a consistent relationship between the level of occasional smoking and mortality. This suggests that there may indeed be a threshold below which tobacco use is not related to total mortality. The nature of the relationship with lung cancer is harder to classify because of large statistical fluctuation, but there is no clear dose-response. These patterns need to be examined in other cohorts.

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## INTRODUCTION

To test the relationship between very low levels of tobacco consumption and mortality among men in America we have analyzed the data from one of the largest U.S. prospective epidemiologic studies that has measured the relationship between mortality and smoking, the U.S. veterans study (1).

## METHODS

1954-79 U.S. Veterans Study. A total of 245,321 veterans of World War I, aged 31-84 years, who held Government Life Insurance Policies provided questionnaire information about their use of tobacco, residence, and usual occupation in 1954 or 1957 (1). Most of these subjects are white men. In January 1954 a questionnaire requesting information about the use of tobacco, residence, usual occupation, and industry of employment was mailed to about 300,000 eligible subjects. Usable replies were obtained from about 68%. In order to increase the response rate, in January 1957 another round of questionnaires was mailed to 1954 nonrespondents, so that ultimately about 248,000, or 84% of the policy holders, responded.

They were followed for survival from January 1, 1954 through September 30, 1980. Survival status of the subjects through 1969 was determined from the life insurance claims and death notices filed with the Veterans Administration (VA) in connection with those claims. Survival status of the subjects was determined through September 1980 by means of the VA Beneficiary Identification and Records Locator Subsystem, which records the fact of death from death notices received by the VA. Methodologic evaluation indicates that the fact of death is known to the VA for 97% of World War I veterans.

Causes of death were obtained from those VA claims folders which contained copies of death certificates along with the death notices. Otherwise, copies of death certificates were obtained from the appropriate state vital records office. The underlying cause of death was coded from the death certificates for 97% of all deaths by trained nosologists according to the International Classification of Diseases, Seventh Revision. All the above veterans cohort data are on a data tape that we have obtained from the National Cancer Institute in order to conduct our own analysis (2).

We have analyzed the U.S. Veterans cohort using Cox proportional hazards regression to determine the death rate ratio for persons who used tobacco occasionally compared with persons who never used tobacco. The follow-up period for the U.S. veterans cohort has been defined to be from January 1, 1954 through December 31, 1979, because follow-up for 1980 may have been somewhat incomplete. Analysis has been done for all causes, all cancer, lung cancer, and all cardiovascular diseases (CVD).

## RESULTS

Table 1 shows the results for U.S. veterans of mortality relative risks as a function of six levels of occasional use of tobacco

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compared with never using tobacco. There is no dose response relationship in relative risk between level of occasional use and mortality from all causes, all cancer, lung cancer, or all cardiovascular diseases. The highest level of occasional use (current for 40+ years) shows a slightly elevated relative risk that corresponds roughly to the risk for former smokers of 1-9 cigarettes per day.

The results of this study, if shown to be true in other cohorts, may reveal a threshold below which tobacco smoking does not increase the total death rate above that among never smokers.

#### REFERENCES

1. Rogot E and Hrubec Z: Trends in mortality from coronary heart disease and stroke among U.S. Veterans: 1954-79. J Clin Epidemiol 1989;42:245-256.
2. Enstrom JE: Smoking Cessation and Mortality Trends Among U.S. Veterans: 1954-79. Manuscript in progress, 1996.

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